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Friday, January 18, 2008

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HUSEYIN:

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Technical Information Specialist
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Set    Items   Postings   Description
S1      62429     318035   S THERMOSTAT? OR THERMO()(STAT OR STATS OR STATIC?)
S2       3671      19032   S (THERMAL? OR AIR()CONDITION? OR HEATING)()CONTROLLER?
S3      65966     337067   S S1:S2
S4       1428      38069   S GUI OR GRAPHIC?()USER()INTERFACE? OR LCD OR
LIQUID()CRYSTAL()DISPLAY?
S5       1013      11059   S ACTIVE?()MATRIX?()DISPLAY? OR (DISPLAY? ? OR GRAPHIC? OR
VISUAL?)(2N)(SCREEN? OR PANEL?)
S6       8909     109292   S SHADE? OR SHADING? OR COLOR? OR COLOUR? OR CROSSHATCH? OR
CROSS()HATCH? OR DARKER? OR MORE()DARK
S7       4908      16688   S CONTRAST?
S8      31032     637763   S PORTION? OR AREA? OR ZONE? OR AREA? OR SECTION? OR SECTOR? OR
BAND? ? OR GRAPHIC?()(LINE? OR COORDINAT?)
S9      29474     384946   S TIME? OR CHRONOLOG?
S10     56956    2201876   S TEMPERATURE? OR HEAT? OR THERMAL? OR CENTIGRADE? OR CELSIUS?
OR FAHRENHEIT? OR KELVIN?
S11     17808     867751   S (DEG OR DEGS OR DEGR OR DEGRS OR DEGREE?)(3N)(C OR F OR K)
S12     12201      29107   S IC=(F23N? OR F25B? OR G05D? OR G09G? OR G02F? OR H01L? OR
F24F?)
S13      8600      13452   S MC=(T01? OR T06? OR U14? OR X27? OR T04?)
S14       190       7593   S S3 AND S1:S2(15N)S4:S5
S15       127       6438   S S14 AND S12:S13
S16       190       9694   S S14:S15
S17       172      19142   S S16 AND (S1:S2 OR S4:S5)(20N)S6:S11
S18        78      15967   S S17 AND S6:S8(20N)(S9 AND S10:S11)
S19        77       4303   S S17 FROM 347, 350
S20       147      20011   S S18:S19
S21        33       2994   S S19 AND S9 AND S10:S11
S22       103      18670   S S18 OR S21
S23        72      13003   S S22 AND AY=1970:2003
S24        64      10568   S S22 NOT AY=2004:2008
S25        76      19726   S S23:S24
S26        21       9822   S S25 AND S6:S7
S27        21       6901   IDPAT (sorted in duplicate/non-duplicate order)
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[File 347] **JAPIO** Dec 1976-2007/Sep(Updated 080116)

[File 348] **EUROPEAN PATENTS** 1978-2007/ 200802

**File 348: For important information about IPCR/8 and forthcoming changes to the IC= index, see HELP NEWSIPCR.*

[File 349] **PCT FULLTEXT** 1979-2008/UB=20080117UT=20080110

**File 349: For important information about IPCR/8 and forthcoming changes to the IC= index, see HELP NEWSIPCR.*

[File 350] **Derwent WPIX** 1963-2008/UD=200804

**File 350: English-language translations of Chinese Utility Model registrations are available starting with update 200769.*

28/5K/11 (Item 11 from file: 349) **Links**
PCT FULLTEXT

01254615
PROGRAMMABLE CONTROLLER WITH SAVING CHANGES INDICATION
CONTROLEUR PROGRAMMABLE A INDICATION DE SAUVEGARDE DES MODIFICATIONS

Patent Applicant/Patent Assignee:

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	Country	Number	Kind	Date
Patent	WO	200561965	A1	20050707

= US 7274972, ATTACHED

Application	WO	2004US37837		20041112
Priorities	US	2003726174		20031202

Designated States: (All protection types applied unless otherwise stated - for applications 2004+)
AE; AG; AL; AM; AT; AU; AZ; BA; BB; BG;
BR; BW; BY; BZ; CA; CH; CN; CO; CR; CU;
CZ; DE; DK; DM; DZ; EC; EE; EG; ES; FI;
GB; GD; GE; GH; GM; HR; HU; ID; IL; IN;
IS; JP; KE; KG; KP; KR; KZ; LC; LK; LR;
LS; LT; LU; LV; MA; MD; MG; MK; MN; MW;
MX; MZ; NA; NI; NO; NZ; OM; PG; PH; PL;
PT; RO; RU; SC; SD; SE; SG; SK; SL; SY;
TJ; TM; TN; TR; TT; TZ; UA; UG; US; UZ;
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[EP] AT; BE; BG; CH; CY; CZ; DE; DK; EE; ES;
FI; FR; GB; GR; HU; IE; IS; IT; LU; MC;
NL; PL; PT; RO; SE; SI; SK; TR;

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ML; MR; NE; SN; TD; TG;

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SZ; TZ; UG; ZM; ZW;

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F24F-011/00	Main
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English Abstract:

A programmable controller such as an HVAC controller that provides a confirmation message to a user indicating that a parameter that has been modified by the user has been or will be saved. Such a confirmation message may help assure a user that their program modifications have been accepted and/or saved by the controller, thereby reducing the anxiety some users feel when programming such controllers.

French Abstract:

La presente invention concerne un controleur programmable, et notamment un controleur de chauffage, ventilation et climatisation, qui fournit a l'utilisateur un message de confirmation indiquant qu'un parametre, qui a ete modifie par l'utilisateur, a ete ou sera sauvegarde. Un tel message de confirmation est susceptible de rassurer l'utilisateur

doutant de l'acceptation et/ou sauvegarde par le controleur de ses modifications du programme, reduisant ainsi l'anxiete que ressentent certains utilisateur lors de la programmation de tels controleurs.

Type	Pub. Date	Kind	Text
Publication	20050707	A1	With international search report.

Detailed Description:

...temperature, humidity, venting, air quality, etc. The controller may include a microprocessor that interacts with other components in the system. For example, in many modem **thermostats** for use in the home, a controller unit equipped with **temperature** and
1
Lumidity sensing capabilities may be provided to interact with a heater, blower, flue vent, air compressor, humidifier and/or other components, to control... ...programmable controller of Figures 1. In this illustrative flow diagram, the controller 1 0 (see Figure 1) is an HVAC controller such as a programniable **thermostat**. At block 56, a user is permitted to edit the HVAC set points and/or schedule. This can encompass entering new values for one or... ...important to note that these positions are merely illustrative and are not intended to be limiting in any manner or fashion.

Figure 10 illustrates a **thermostat** 90 having a housing 20 and a touch screen 22. Touch **screen** 22 can **display** information to the user as well as accept inputs from the user. The user can make selections by touching appropriate **portions** of touch 1 5 screen 22, as will be described in greater detail below.

As illustrated, touch screen 22 emulates a number of buttons commonly found on **thermostats**. Along the left side of touch screen, a fan selection icon 92 and a system icon 94 permit a user to select from a variety... ...screen 22 includes several button icons along the bottom of touch screen 22. Each button icon emulates a button as might be found on a **thermostat** lacking a touch screen. The button icons include a SCHED
icon 96, a HOLD icon 98, a CLOCK icon 100, a SCREEN icon 102 and ... ...program 40 (Figure 1). For example, if a user is home for the day, lie or she can use HOLD icon 98 to maintain the **temperature** setting of the WAKE period throughout the day, rather than cycling through the customary LEAVE and RETURN periods.

Touch **screen** 22 also **displays** a, **temperature** value 106 that provides the user with the present **temperature** within their enviromnent, as well as a **temperature** 1 5 setting 108. Temperature setting 108 displays the temperature set point that HVAC controller 1 0 is presently following. Touch screen 22 includes a... ...time setting to accommodate entering or departing Daylight Savings Time (DST). In other embodiments, HVAC I 0 controller 10 can automatically adapt to Daylight Savings **Time**. In some embodiments, HVAC controller 10 can be in radio communication with a standard **time** reference source, if desired.

Touch **screen** 22 can **display** the present **time** at **TIME** icon 116. As
illustrated, the **time** is displayed using a 12 hour clock, with an AM or PM notation.

1 5 In some embodiments, the time can be displayed using a... ...a number of
parameters 38 (see Figure 1) in accordance with an illustrative embodiment of the present invention. Prior to beginning an editing process, the **thermostat** 90 can appear as shown in Figure 1 0. With reference to Figure 9, a user can initiate an edit mode, as indicated at block... ...may display the edit mode as illustrated in Figure I I and as in-dicated at block 122 of Figure 9.

Figure I I shows **thermostat** 90 in an initial edit mode. Initially, touch **screen** 22 **displays** the current **temperature**

set points as well as the present day of the week I 0 and the present **time**. The days of the week are shown across the top of touch screen 22, and are referenced as MON icon 124, TUE icon 126, WED... ...of the week may be presented in other ways, such as having WED icon 128 blink, or be displayed in bold, or as a different **color** or **shade**.

Touch **screen** 22 **displays** a **HEAT** icon 140 that indicates the **temperature** set point for **heating** operations and a COOL icon 142 that indicates the temperature set point for cooling operations. HVAC controller 10 (see Figure 1) can instruct HVAC equipment... ...days of the week he or she wish to edit, as indicated at block 158. Control passes to display block 160, which corresponds to the **thermostat** 90 as illustrated in Figure 12. In Figure 12, the MON icon 124, TUE icon 126, WED icon 128, THU icon 130, FRI icon 132... ...point, the user is in a position to select a time period for modification,
1 5
followed by modifying one or more of the start **time**, **heating temperature** set point and cooling **temperature** set point for the selected **time** period. Touch **screen** 22 **displays HEAT** icon 140, Which displays the **heating temperature** set point, as well as UP icon 164 and DOWN icon 166. UP icon 164 and DOWN icon 166 can be used to raise or lower the **heating temperature** set point displayed by **HEAT** icon 140.

Similarly, touch **screen** 22 **displays** COOL icon 142, which displays the cooling **temperature** set point. UP icon 168 and DOWN icon 170 can be used by the user to raise or lower the cooling **temperature** set point displayed by COOL icon 142.

Touch **screen** 22 **displays TIME** SET POINT icon 172, which can be used to
1 0 display the starting point of any selected **time** period. As with TIME icon 116 that displays current time, TIME SET POINT icon 172 can display time either using a 12 hour clock and an AM/PM designation, or a 24 hour military style clock. The starting time for any selected **time** period can be adjusted up or down using UP icon 174 and
DOWN icon 176. In some embodiments, touch **screen** 22 can **display** a CANCEL
PERIOD icon 178, which enables a user to switch to editing a different **time** period.

For illustrative purposes and with reference to Figure 9, the user can then select the WAKE period for editing at block 1 80. As... ...of the word "WAKE" on WAKE icon 148. In other embodiments, the entire WAKE icon 148 could blink, be bolded, be presented in a different **color** or **shading** pattern, or be designated in any other suitable way. In other embodiments, each of the non-selected **time** periods could be grayed or blanked out.

The user can select another time period for modification. In the illustrated 1 5 example, as shown in...week that were modified by the user. In other embodiments, MODIFIED PARAMETER icon
200 can display one or more of the modified parameters sucti as **time** and **temperature** set points, if desired.

Once the confirmation message has been displayed for an appropriate period of **time**, **thermostat** 90 can return to norinal operation, as referenced at block 197 of Figure 9. In some illustrative embodiments, the confirmation message can be displayed for a period of at least 1 second, at least 5 seconds, at least 10 seconds, or any other suitable **time** period, as desired.

Figures 9-18 illustrated a particular illustrative embodiment in which
thermostat 90 included touch screen 22, which was used for the interaction between **thermostat** 90 and the user. In other embodiments, as illustrated in Figures 19-27, a **thermostat** having a display and one or more key buttons can be used.

Figure 19 is a flowchart illustrating an illustrative step-by-step process of... ...accordance with another embodiment of the invention. Figures 20-27 are non-limiting schematic illustrations of an HVAC controller configured as a residential or commercial **thermostat**, demonstrating the process steps outlined in Figure 19. It should be noted that Figures 20-27 illustrate an HVAC controller having particular icons and buttons ... ...important to note that these positions are merely illustrative and are not intended to be limiting in any manner or fashion.

Figure 20 displays a **thermostat** 202 having a housing 204 and a display 206.

Display 206 can be any suitable display such as an LED display, an LCI:) display, or any other suitable display. **Thermostat** 202 includes a button 208, a button 21 0 and a button 212 that can be assigned to various parameters or fimctions, depending on, for example, whether **thermostat** 202 is in an operating mode or an editing mode. Display 206 includes a BUTTON 208 icon 214 corresponding to the assigned use of button... ...button 220 and DOWN button 222 can be used to adjust the value of a parameter up or down
as appropriate. I
Figure 20 illustrates **thermostat** 202 in an editing mode. As a result, button 208 is assigned to SYSTEM AND FAN (as indicated by BUTTON 208 icon), button 21 0... ...outlined at block 236 by hitting button 210, which as indicated in Figure 20 is presently assigaed (as
indicated by BUTTON 210 icon) to SCHEDULE. **Thermostat** 202 enters and
displays an edit mode, as referenced at display block 238 of Figure 19, which produces the screen shown in Figure 21. In... ...days can be selected for editing. When a particular day is
22
highlighted in LIST OF DAYS 242, hitting button 212 (assigned to VIEW) causes **thermostat** 202 to display the **time** and **temperatures** set points for that particular day.

GO BACK refers to back tracking to a previous step.

During the process of selecting days to edit from... ...embodiments, the selected days can be indicated in any number of ways, such as having the selected days blink, bebolded, be presented in a different **color**, **shading**, or font, or by using any other suitable designation.

Once the days have been selected, the user can proceed to the next step by hitting button 210. Figure 23 illustrates **thermostat** 202 ready for the user to select a particular **time** period for editing. In some embodiments, as illustrated in Figure 23, **thermostat** 202 defaults to initially editing the WAKE period as referenced at block 250 of Figure 19.

Display 206 now displays SELECTED DAYS icon 248, which... ...In other embodiments, each of the days of the week can be displayed, with the selected days being bolded, blinking, or presented in a different **color**, **shading** or font, or by using
23
any other suitable designation
Display 206 of Figure 23 includes **TIME** KERIOD icon 252, which provides
an indication to the user of which time period has been selected for editing. As illustrated, the selected "Wake" time period can be blinking, as evidenced by the absence of the wake **time** period in Figure 23. la- other embodiments, the selected

time period can be bolded or presented in a different **color**, **shading** or font, or by using any other suitable designation. In some emlbodiments, only the selected **time** period is presented, while the remaining time period- s are blanked or grayed out.

With respect to Figure 19, display 206 displays the initial WAKE... ...TEMPERATURE icon 258 displays the new temperature setting, as referenced at block 272 of Figure 19.

After the user has finished modifying each of the **time** and **temperature** set 1 0 points for the WAKE period, he or she can inform **thermostat** 202 that he or she is finished entering changes for that period. It should be noted that each of remaining **time** periods LEAVE, RETURN and SLEEP can be modified in much the same way, although not explicitly shown in the Figures.

The step of notifying **thermostat** 202 that the user is done entering changes can in some embodiments be achieved by hitting button 212, which as indicated by BUTTON icon 216... ...DONE. After hitting button 212, as referenced at block 273 of Figure 19, control may be passed to display block 274. At display block 274, **thermostat** 202 may provide a confirmation message that the changes have been or will be saved, as illustrated in Figure 27. The modified parameters are also... ...confirmation message, or any other suitable confirmation message to the user. Once MESSAGE icon 276 has provided the confirmation message for an appropriate period of **time**, and in the illustrative embodiment, **thermostat** 202 can return to its customary operation at referenced at block 276 of Figure 19.

In Figure 27, many of the display icons not necessary...

Claims:

...least one of a graphical display, a touch screen and a keypad.

36 The HVAC controller of claim 33, wherein the HVAC controller
comprises a **thermostat.**
37 The HVAC controller of claim 33, farther configured to display a plurality of parameters and to permit the user, via the interface, to select... ...been or will be saved.

54 The programmable thennostat of claim 53, wherein the display means
comprises an alpha numeric capable display.
55 The programmable **thermostat** of claim 53, wherein the display means
comprises a graphical display.
56 The programmable **thermostat** of claim 53, wherein the receiving means
and the setting means comprise a touch screen.
57 The programmable **thermostat** of claim 53, wherein the informing means
comprises an alpha numeric display.36. The programmable **thermostat** of claim 53, wherein the informing meanscomprises a graphical display.
59 The programrnable **thermostat** of'claim 53, wherein the informing means
comprises an aural message.37

US007274972B2

(12) **United States Patent**
Amundson et al.

(10) **Patent No.: US 7,274,972 B2**
(45) **Date of Patent: Sep. 25, 2007**

(54) **PROGRAMMABLE CONTROLLER WITH SAVING CHANGES INDICATION**

(75) Inventors: **John B. Amundson**, Plymouth, MN (US); **Brent D. Vick**, Minnetonka, MN (US); **Gabriel A. Bergman**, St. Louis Park, MN (US); **Heidi J. Finch**, Champlin, MN (US)

(73) Assignee: **Honeywell International Inc.**, Morristown, NJ (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 66 days.

(21) Appl. No.: **10/726,174**

(22) Filed: **Dec. 2, 2003**

(65) **Prior Publication Data**

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(51) **Int. Cl.**
G05D 23/00 (2006.01)

(52) **U.S. Cl.** **700/276**; 700/17; 236/94; 165/267

(58) **Field of Classification Search** ..... 700/276, 700/17, 16, 83, 87; 236/46 R, 51, 94, 91 D, 236/91 R; 704/275; 715/708; 360/69; 165/267; 340/825.72; 345/702
See application file for complete search history.

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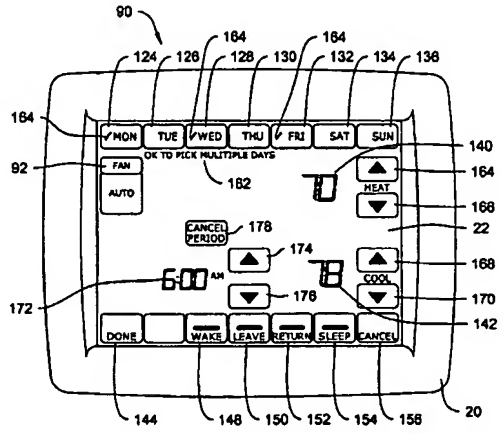
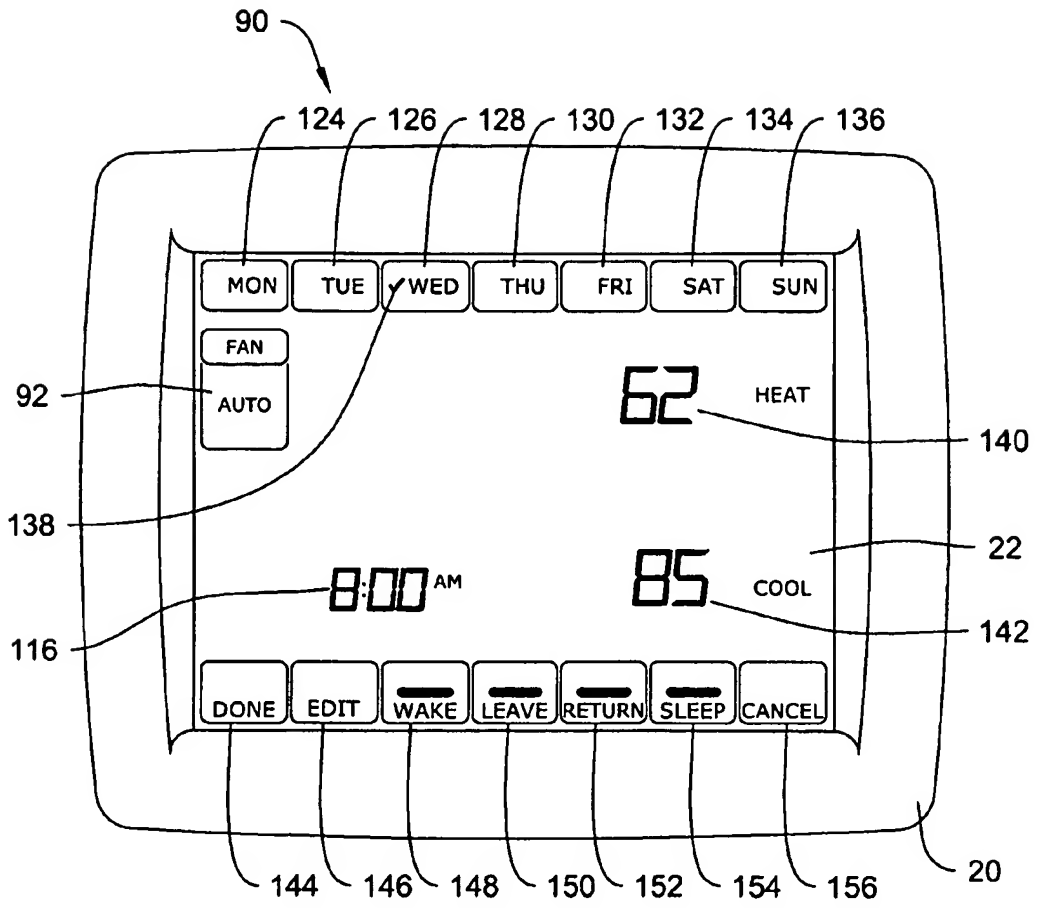
Primary Examiner—Leo Picard
Assistant Examiner—Steven R. Garland

(57) **ABSTRACT**

A programmable controller such as an HVAC controller that provides a confirmation message to a user indicating that a parameter that has been modified by the user has been or will be saved. Such a confirmation message may help assure a user that their program modifications have been accepted and/or saved by the controller, thereby reducing the anxiety some users feel when programming such controllers.

53 Claims, 27 Drawing Sheets

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116
142
DONE
EDIT
WAKE
LEAVE
RETURN
SLEEP
CANCEL
144
146
148
150
152
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156
20

Figure. 11

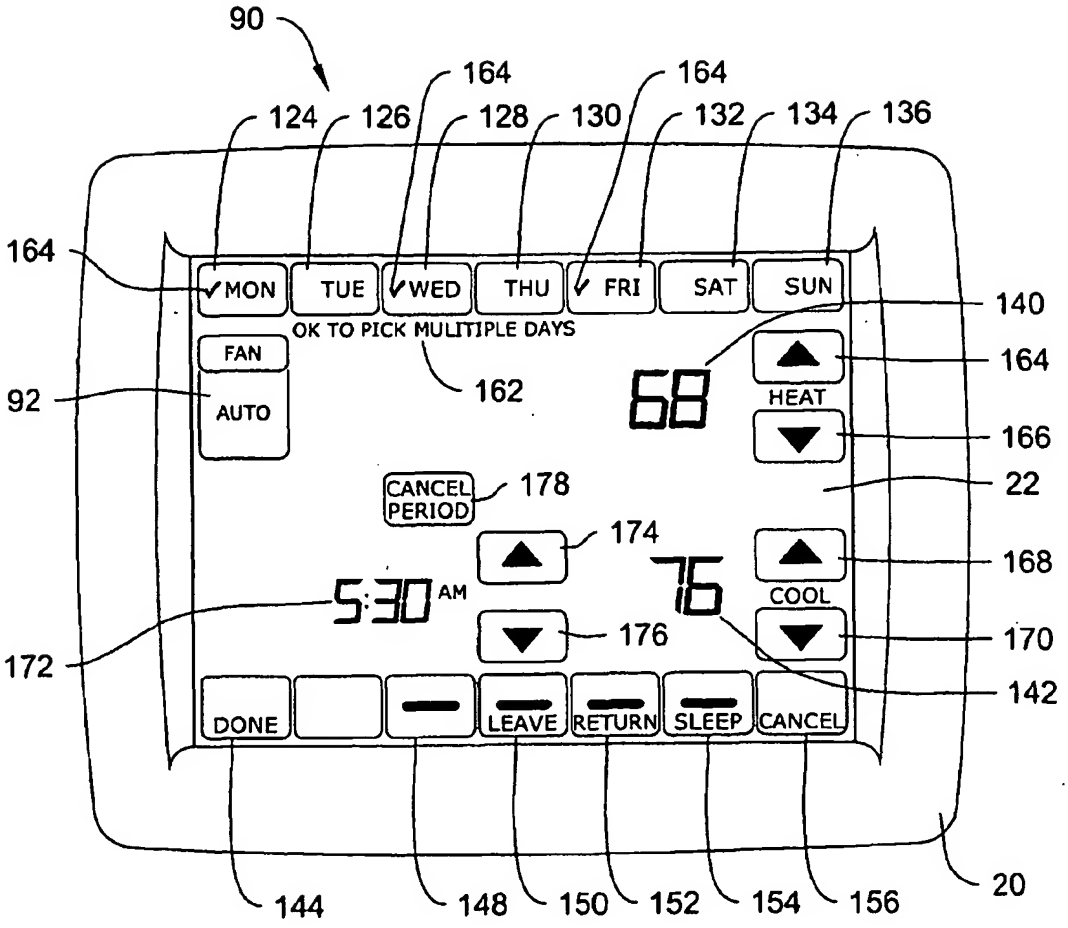
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Figure. 14

Touch screen **22** can display the present time at TIME icon **116**. As illustrated, the time is displayed using a 12 hour clock, with an AM or PM notation. In some embodiments, the time can be displayed using a 24 hour military clock, if desired.

Touch screen **22** also includes a SCREEN icon **104** that can be used to temporarily disable touch screen **22** from accepting any user inputs so that the surface of touch screen **22** can be wiped off or otherwise cleaned. MORE icon **106** permits a user to access additional features of HVAC controller **10**, such as scheduling reminders for filter replacement, setting operational parameters for a UV lamp, and the like. In some embodiments, touch screen **22** can include an OUTDOOR icon **118** that displays the outside ambient temperature.

FIG. **9** illustrates a step-by-step process for modifying a number of parameters **38** (see FIG. **1**) in accordance with an illustrative embodiment of the present invention. Prior to beginning an editing process, the thermostat **90** can appear as shown in FIG. **10**. With reference to FIG. **9**, a user can initiate an edit mode, as indicated at block **120**. In some embodiments, the edit mode can be reached by selecting the SCHED icon **96** (FIG. **10**). As a result, touch screen **22** may display the edit mode as illustrated in FIG. **11** and as indicated at block **122** of FIG. **9**.

FIG. **11** shows thermostat **90** in an initial edit mode. Initially, touch screen **22** displays the current temperature set points as well as the present day of the week and the present time. The days of the week are shown across the top of touch screen **22**, and are referenced as MON icon **124**, TUE icon **126**, WED icon **128**, THU icon **130**, FRI icon **132**, SAT icon **134** and SUN icon **136**. As illustrated, the present day of the week is Wednesday, as indicated by the checkmark **138** present on WED icon **128**. In other embodiments, the present day of the week may be presented in other ways, such as having WED icon **128** blink, or be displayed in bold, or as a different color or shade.

Touch screen **22** displays a HEAT icon **140** that indicates the temperature set point for heating operations and a COOL icon **142** that indicates the temperature set point for cooling operations. HVAC controller **10** (see FIG. **1**) can instruct HVAC equipment **14** (see FIG. **1**) to heat or cool as appropriate, in accordance with the input given to HVAC controller via SYSTEM icon **94** (FIG. **10**).

In FIG. **11**, touch screen **22** includes several button icons across the bottom of touch screen **22**. In the illustrated embodiment, these button icons include a DONE icon **144**, an EDIT icon **146**, a WAKE icon **148**, a LEAVE icon **150**, a RETURN icon **152**, a SLEEP icon **154**, and a CANCEL icon **156**. Each of the icons will be described in greater detail below. CANCEL icon **156** permits the user to cancel any entered changes.

With reference to FIG. **9**, a user can select which days of the week he or she wish to edit, as indicated at block **158**. Control passes to display block **160**, which corresponds to the thermostat **90** as illustrated in FIG. **12**. In FIG. **12**, the MON icon **124**, TUE icon **126**, WED icon **128**, THU icon **130**, FRI icon **132**, SAT icon **134** and SUN icon **136** are each displayed, along with a message icon **162** that informs the user that multiple days can be selected. The particular message being displayed by message icon **162** can be any appropriate message and is not limited to the illustrated message.

In the illustrative embodiment, the user can select one or more days to edit by simply touching touch screen **22** proximate the appropriate days of the week icons. In the process of selecting the one or more days to edit, touch screen **22** can provide a display as illustrated in FIG. **13**. In the illustrated embodiment, the user has selected Monday, Wednesday and Friday for editing, as noted by checkmark **164** present on each of MON icon **124**, WED icon **128**, and FRI icon **132**. In some embodiments, the user will recognize that he or she is in the edit mode, as EDIT icon **146** (as seen in FIG. **11**) will be blanked or grayed out (as seen in FIG. **13**), and also by the presence of the UP button **112** and DOWN button **114**, as well as the absence of an EDIT button.

At this point, the user is in a position to select a time period for modification, followed by modifying one or more of the start time, heating temperature set point and cooling temperature set point for the selected time period. Touch screen **22** displays HEAT icon **140**, which displays the heating temperature set point, as well as UP icon **164** and DOWN icon **166**. UP icon **164** and DOWN icon **166** can be used to raise or lower the heating temperature set point displayed by HEAT icon **140**. Similarly, touch screen **22** displays COOL icon **142**, which displays the cooling temperature set point. UP icon **168** and DOWN icon **170** can be used by the user to raise or lower the cooling temperature set point displayed by COOL icon **142**.

Touch screen **22** displays TIME SET POINT icon **172**, which can be used to display the starting point of any selected time period. As with TIME icon **116** that displays current time, TIME SET POINT icon **172** can display time either using a 12 hour clock and an AM/PM designation, or a 24 hour military style clock. The starting time for any selected time period can be adjusted up or down using UP icon **174** and DOWN icon **176**. In some embodiments, touch screen **22** can display a CANCEL PERIOD icon **178**, which enables a user to switch to editing a different time period.

For illustrative purposes and with reference to FIG. **9**, the user can then select the WAKE period for editing at block **180**. As illustrated in FIG. **14**, the user has elected to modify one or more of the start time, the heating set point and the cooling set point for the WAKE period. In the illustration, the user has set the starting time for the WAKE period at 5:30 AM by appropriately touching UP icon **174** and DOWN icon **176**. The heating set point temperature has been adjusted to 68° F. by appropriately touching UP icon **164** and DOWN icon **166** while the cooling set point temperature has been adjusted to 76° F. by appropriately touching UP icon **168** and DOWN icon **170**. As illustrated, temperatures are shown in degrees Fahrenheit, but degrees Celsius can also be used. Each of the starting time, heating set point temperature and cooling set point temperature, whether modified or not, are displayed by TIME SET POINT icon **172**, HEAT icon **140** and COOL icon **142**, respectively, as outlined at block **182** of FIG. **9**.

In some embodiments, the icon representing the selected time period can be modified to remind the user which time period has been selected. In particular embodiments, the text present on the icon can blink. As shown in FIG. **14**, WAKE icon **148** is blinking, hence the (temporary) absence of the word "WAKE" on WAKE icon **148**. In other embodiments, the entire WAKE icon **148** could blink, be bolded, be presented in a different color or shading pattern, or be designated in any other suitable way. In other embodiments, each of the non-selected time periods could be grayed or blanked out.

The user can select another time period for modification. In the illustrated example, as shown in FIG. **15** and as indicated at block **184** (FIG. **9**), the user has elected to

28/5,K/1 (Item 1 from file: 350) **Links**
Derwent WPIX

THIS APPLICATION

0014731544 *Drawing available*
WPI Acc no: 2005-079165/200509
XRPX Acc No: N2005-069546

Thermostat controlling method for heating ventilating and air conditioning system, involves providing LCD display, and illustrating one shaded area defining temperature differential centered about temperature set by user

Patent Assignee: HULL G G (HULL-I)
Inventor: HULL G G

Patent Family (1 patents, 1 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 20040262410	A1	20041230	US 2003462293	P	20030411	200509	B
			US 2004823486	A	20040412		

Priority Applications (no., kind, date): US 2003462293 P 20030411; US 2004823486 A 20040412

Patent Details

Patent Number	Kind	Lan	Pgs	Draw	Filing Notes	
US 20040262410	A1	EN	18	16	Related to Provisional	US 2003462293

```
Set     Items   Postings   Description
S1      78983     135250   S THERMOSTAT? OR THERMO()(STAT OR STATS OR STATIC?)
S2        525       1481   S (THERMAL? OR AIR()CONDITION? OR HEATING)()CONTROLLER?
S3      79456     136731   S S1:S2
S4       1236       4310   S GUI OR GRAPHIC?()USER()INTERFACE? OR LCD OR
LIQUID()CRYSTAL()DISPLAY?
S5        648       1744   S ACTIVE?()MATRIX?()DISPLAY? OR (DISPLAY? ? OR GRAPHIC? OR
VISUAL?)(2N)(SCREEN? OR PANEL?)
S6       9501      25190   S SHADE? OR SHADING? OR COLOR? OR COLOUR? OR CROSSHATCH? OR
CROSS()HATCH? OR DARKER? OR MORE()DARK
S7       2307       3319   S CONTRAST?
S8      29355     133470   S PORTION? OR AREA? OR ZONE? OR AREA? OR SECTION? OR SECTOR? OR
BAND? ? OR GRAPHIC?()(LINE? OR COORDINAT?)
S9      37805     126204   S TIME? OR CHRONOLOG?
S10     57182     433940   S TEMPERATURE? OR HEAT? OR THERMAL? OR CENTIGRADE? OR CELSIUS?
OR FAHRENHEIT? OR KELVIN?
S11      7627      46838   S (DEG OR DEGS OR DEGR OR DEGRS OR DEGREE?)(3N)(C OR F OR K)
S12       288       2210   S S3 AND S1:S2(20N)S4:S5
S13        17        583   S S12 AND S4:S5(20N)S6:S8 AND S9 AND S10:S11
S14        73        619   S S12 AND S6:S7
S15        76       1112   S S13:S14
S16        47        824   S S15 AND PY=1970:2003
S17        49        786   S S15 NOT PY=2004:2008
S18        49       1054   S S16:S17
S19        35        857   RD  (unique items)
 ; show files
```

[File 2] **INSPEC** 1898-2008/Dec W3

[File 5] **Biosis Previews(R)** 1926-2008/Jan W2

[File 6] **NTIS** 1964-2008/Jan W4

[File 8] **Ei Compendex(R)** 1884-2008/Dec W5

[File 34] **SciSearch(R) Cited Ref Sci** 1990-2008/Jan W2

[File 45] **EMCare** 2008/Jan W2

[File 50] **CAB Abstracts** 1972-2008/Dec

[File 56] **Computer and Information Systems Abstracts** 1966-2008/Dec

[File 60] **ANTE: Abstracts in New Tech & Engineer** 1966-2008/Dec

[File 62] **SPIN(R)** 1975-2008/Dec W4

[File 16] **Gale Group PROMT(R)** 1990-2008/Jan 10

**File 16: Because of updating irregularities, the banner and the update (UD=) may vary.*

[File 20] **Dialog Global Reporter** 1997-2008/Jan 18

[File 47] **Gale Group Magazine DB(TM)** 1959-2008/Jan 14

[File 122] **Harvard Business Review** 1971-2007/Sep

**File 122: File 122 is temporarily not updating.*

[File 141] **Readers Guide** 1983-2007/Oct

[File 148] **Gale Group Trade & Industry DB** 1976-2008/Jan 04

**File 148: The CURRENT feature is not working in File 148. See HELP NEWS148.*

[File 160] **Gale Group PROMT(R)** 1972-1989

[File 471] **New York Times Fulltext** 1980-2008/Jan 21

[File 482] **Newsweek** 2000-2008/Jan 14

[File 484] **Periodical Abs Plustext** 1986-2008/Jan W1

[File 568] **Asian Bus. Intelligence Rpts** 2002/Oct 25

**File 568: This file no longer receives updates. *KWIC costs $3.50 in File 568.*

[File 570] **Gale Group MARS(R)** 1984-2008/Jan 18

[File 610] **Business Wire** 1999-2008/Jan 18

**File 610: File 610 now contains data from 3/99 forward. Archive data (1986-2/99) is available in File 810.*

[File 619] **Asia Intelligence Wire** 1995-2008/Jan 16

[File 621] **Gale Group New Prod.Annou.(R)** 1985-2008/Jan 04

[File 623] **Business Week** 1985-2008/Jan 17

[File 624] **McGraw-Hill Publications** 1985-2008/Jan 18

**File 624: Homeland Security & Defense and 9 Platt energy journals added Please see HELP NEWS624 for more*

[File 635] **Business Dateline(R)** 1985-2008/Jan 18

[File 636] **Gale Group Newsletter DB(TM)** 1987-2008/Jan 18

[File 646] **Consumer Reports** 1982-2007/Dec

[File 748] **Asia/Pac Bus. Jrnls** 1994-2005/Dec 13

**File 748: File 748 is closed (no longer updating). Use Files 20 and 619 for current articles.*

[File 759] **Business Insights** 1992-2007/Nov

[File 768] **EIU Market Research** 2008/Jan 12

[File 781] **ProQuest Newsstand** 1998-2008/Jan 17

[File 810] **Business Wire** 1986-1999/Feb 28

?

19/5,K/5 (Item 2 from file: 15) **Links**

Fulltext available through: USPTO Full Text Retrieval Options STIC Full Text Retrieval Options

02336575 112537443

****USE FORMAT 7 OR 9 FOR FULL TEXT****

There are T-stats for the middle of the road

Checket-Hanks, B

Air Conditioning, Heating & Refrigeration News v215n13 pp: 15-16
Mar 25, 2002
ISSN: 0002-2276 **Journal Code:** ACHR
Document Type: Periodical; Feature **Language:** English **Record Type:** Fulltext **Length:** 2 Pages
Special Feature: Illustration Photograph
Word Count: 1559

Abstract:

The trend among control and hvac accessory manufacturers definitely seems to swing toward the more complex, programmable, zoneable **thermostat** systems. However, new products have also come out for smaller applications and less technically skilled owners - the middle of the roaders. Studies have shown that if the end user does not understand how to use the **thermostat** or other home controls, that customer is less likely to get all the benefits they could. Match the product to the customer's technical level; the less training that is required, the better. **Thermostats** from PSG Controls, Inc., Maple Chase, Honeywell, CTC, and other manufacturers are discussed.

Geographic Names: United States; US

Descriptors: HVAC; Control systems; Manyproducts; Manycompanies
Classification Codes: 8650 (CN=Electrical & electronics industries); 9190 (CN=United States)
Print Media ID: 34761

Abstract:

The trend among control and hvac accessory manufacturers definitely seems to swing toward the more complex, programmable, zoneable **thermostat** systems. However, new products have also come out for smaller applications and less technically skilled owners - the middle of the roaders. Studies have shown that if the end user does not understand how to use the **thermostat** or other home controls, that customer is less likely to get all the benefits they could. Match the product to the customer's technical level; the less training that is required, the better. **Thermostats** from PSG Controls, Inc., Maple Chase, Honeywell, CTC,

and other manufacturers are discussed.

Text:

FOCUS **Thermostats**
The Honeywell Chronotherm IV Plus programmable wireless **thermostat** is designed for retrofit zoning. Here is the unit's face plate and what's behind the face plate.

Homeowners have a wide range of technical skills, as well as a variety of home sizes and **heating**-cooling system complexity. There seem to be ample options at the more sophisticated end, and several products at the least sophisticated end - but what about...

...skills lie somewhere in between these extremes?

The trend among control and hvac accessory manufacturers definitely seems to swing toward the more complex, programmable, zoneable **thermostat** systems. However, new products have also come out for smaller applications and less technically skilled owners - the middle of the roaders.

Note: This article also includes introductions of more sophisticated **thermostat**-zoning products, as well as a couple of products that are less complicated. The middle can cover a lot of ground.

Also, descriptions such as...

...skills and technical knowledge of the end user. Just remember: Studies have shown that if the end user doesn't understand how to use the **thermostat** or other home controls, that customer is less likely to get all the benefits they could. Match the product to the customer's technical level...

...training that's required, the better.

MID-RANGE COMPLEXITY

PSG Controls, Inc. (Perkasie, PA), cheered, "We finally got the programming right!" of its Medallion programmable **thermostats**. "Programmable **thermostats** save energy, but the programming has been a nightmare for both the contractor and the end user," the company said.

"Most people can program the...

...instructions - they are that simple to program," the company continued. "Programming that is 5-2 or all 7 days can have the same economy/comfort **times** and **temperature** settings."

Features include auto changeover from **heat** to cool, a two-- speed fan, continuous fan speed, and user-selected fan configuration (depending on the model selected). It also features soft stop and comfort limits.

The face plate is simple: high, low, auto, and stop. Three buttons along the bottom indicate fan, up, and down arrows (for controlling **temperature**).

The Medallion also features "Service Watch" which helps contractors remind customers that their equipment needs service and maintenance performed either by the homeowner (filter changes) or the contractor (system checkup). The contractor sets the hours of fan run **time**; when that **time** has elapsed, a message on the **thermostat** tells the homeowner when filters need to be changed.

The hvac systems' run-**time** hours are also set by the contractor; when those hours are up, the **thermostat** displays a message to call the contractor for a system check-up. The telephone number of the service contractor also is displayed (10 digits). The display reads "Call for Check Up," with system needing service (filter/ **heater**/air conditioning) and the contractor's phone number.

The homeowner presses up or down buttons, and the "Check Up" display disappears, returning to the normal **temperature** display. However, the "Call for Check Up" will then be displayed for 1 minute every 15 minutes, then automatically returns to normal **temperature** display; this function will continue until the contractor resets the run **time**

.

Maple Chase (an Invensys unit based in Downers Grove, IL) recently introduced the Insight' **thermostat**, which the company called "an easily programmed device that will finally fulfill the programmable **thermostat**'s promise.

According to Timothy Butler, senior product manager of Maple Chase, "The programming is completely intuitive, unlike any other **thermostat** on the market. It was designed to be so simple, you can program it without a manual."

The **thermostat** has a soft-key programming technique common in cell phones and ATMs, the company said. The **thermostat** walks users through programming step by step. Options include 7-day, 5-2 day, 5-1-1 day, and 24-hr programming.

The model also features a large dot-matrix display with a 20% larger font size; special software that enables the **thermostat** to be programmed in English, Spanish, or French; and a website (www.aboutinsight.com) where users can access specs, manuals, programming-setup instructions, and sell sheets.

For a zoned product with a moderate level of user complexity, Honeywell (Golden Valley, MN) offers its Chronotherm IV Plus programmable wireless **thermostat** for retrofit zoning; it is now much easier for contractors to install with the company's RF wireless **thermostat**, the company said. The Chronotherm IV is also sold as a standalone **thermostat**.

This latest model of Chronotherm can be used with single- or multi-zone

receivers for zoned control of up to three areas, the company said. Its pulse-code modulation won't interfere with other wireless systems, and it can be mounted in each **zone** of living space up to 200 ft from the receiver.

The **thermostat**'s bright **LCD** display and preprogrammed **temperature** settings offer proven energy savings, the company said. It's also easy for the user to change the **temperature** up or down manually.

Aprilaire's Communicating **thermostat** boasts increased flexibility and easier installation.

PSG Control's Medallion features the "Service Watch," which helps contractors remind customers that their equipment needs service maintenance.

The Maple Chase (Invensys) Insight **thermostat** is designed to be "homeowner friendly."
"This product works like a regular **thermostat**:' commented Janell J. Siegfried, Siegfried Dunlay Corp., Golden Valley, MN. "The fact that it is wireless is a benefit from an installation standpoint, but doesn't affect how a consumer interacts with the product:'

The T8665A **thermostat** provides electronic control of 24 vac **heating**-cooling systems. It is used in conjunction with the W8665A receiver for IH/IC single-zone conventional applications. It is used with the W8665E receiver...

...Minizone Panel, EMM-3U Universal Electronic MiniZone, or TotalZone' panel. Systems, Controls & Instruments, L.L.C. (Pipersville, PA) recently introduced its TED Series 24-vac **thermostats** for hvac systems, ptac's, and fancoil units. The **thermostats** are said to be easy to operate and are low cost. An external **temperature** sensor is optional.

This basic model offers cool, off, **heat**, and auto-on fan settings. Models range from one **heating** zone and one setpoint, to two **heating** zones, one cooling zone, and one setpoint (for **heat** pumps).

The company's ERT 24 Series 24-vac **thermostats** are said to be fully digital and easy to install. Again, an external return sensor is optional. The faceplate is designed to be easy for the homeowner to navigate.

CTC's (A Hunter Fan Company, Memphis, TN) mechanical **thermostats** are available in horizontal and vertical configurations. All models offer the company's "quiet switching" mercury-bulb design. The company said these models require no subbase for **heating**, cooling, or **heating** -cooling installations.

The company's Model 43004, for example, is a horizontal unit designed for use with most fouror five-wire, 24-vac systems and single-stage **heat**

pumps. Model 43005 is the vertical unit. Model 43320 is a vertical unit that may be used with most two-wire, 24-- vac systems. It has a fixed cooling anticipator and no subbase is required.

Heat-only **thermostats** also are available in this new line.

FOR MORE SOPHISTICATED CUSTOMERS AND APPLICATIONS

Research Products Corp. (Madison, WO announced the first-quarter release of its new Aprilaire Communicating **thermostat**. The new system boasts increased flexibility and easier installation, according to Sean McCarthy, Aprilaire sales manager.

The new features include a universal **thermostat** for multiple hvac applications; a large, backlit **temperature** display; and an optional customized message display. Current features include central monitoring and remote monitoring capability.

Intuitive Windows-style pointand-click software features individual and global equipment schedules, adjustable energy management limits, and software security lockouts (to eliminate the need for lockboxes). Accessories include remote, flush-mounted

temperature sensors and
humidity sensors.

Incorporating hvac automation into a building's **heatingcooling** system allows for energy control as well as a comfortable environment, McCarthy said. Limits can be set for **temperature** overrides from a PC. Individual users can then control their own comfort within energy management guidelines.

DuroZone (a Division of DuroDyne Corp., Farmingdale, NY), recently introduced the ComfortMax zone control **thermostat**. The company describes it as a "full-function communicating **thermostat** turnkey system for light commercial applications and medium- to high-end housing."

The **thermostat** features Master **thermostat** zone monitoring and override, an economy mode, 5-1-1 setback programming, manual or auto changeover, and system programming for central a/c or **heat** pump systems.

The Master **thermostat** can be used to override individual zone **thermostats**, the company explained. The CMS Master unit can monitor, change, and lockout changes in any or all zones. All equipment selection is done at the Master stat. It features fan control, the 5-1-1 programming, emergency **heat**, and an unoccupied economy mode setting of up to 10 days.

Each CZT zone stat also features 5-1-1 programming in **heat**, cool, and auto changeover modes, plus economy **heat** and constant fan participation.

They are joined by the CCB control board, which operates as a "home base" to centralize the wiring. This unit can...

...fuse for circuit protection, and an indicator light to verify system communication. A fault indicator can be wired to the panel, as can an outdoor **temperature** sensor that relays information to the Master **thermostat**.

The entire ComfortMax zone control system joins operation of the company's Master and Slave **thermostats** and zone dampers, which are all wired to the circuit board.
BY B. CHECKET-HANKS OF THE NEWS STAFF

19/5,K/6 (Item 3 from file: 15) **Links**

Fulltext available through: USPTO Full Text Retrieval Options STIC Full Text Retrieval Options

01995393 50962796

****USE FORMAT 7 OR 9 FOR FULL TEXT****

They're not just round and one-dimensional anymore

Hall, John R

Air Conditioning, Heating & Refrigeration News v209n9 pp: 30
Feb 28, 2000
ISSN: 0002-2276 **Journal Code:** ACHR
Document Type: Periodical; Feature **Language:** English **Record Type:** Fulltext **Length:** 1 Pages
Special Feature: Photograph
Word Count: 756

Abstract:

Lifestyles make it almost impossible to rely solely on one **temperature** setting to provide adequate comfort throughout the day and night. New **thermostat** products which are designed to produce new comfort levels to homeowners and businesses, which were presented at the IAHR Expo, are discussed.

Geographic Names: United States; US

Descriptors: Trade shows; HVAC; Control systems; Manyproducts; Manycompanies
Classification Codes: 9190 (CN=United States); 7300 (CN=Sales & selling); 5150 (CN=Energy management); 5240 (CN=Software & systems)
Print Media ID: 34761

Abstract:

Lifestyles make it almost impossible to rely solely on one **temperature** setting to provide adequate comfort throughout the day and night. New **thermostat** products which are designed to produce new comfort levels to homeowners and businesses, which were presented at the IAHR Expo, are discussed.

Text:

...controls, both temp and humidity, are today's products.

DALLAS, TX - It used to be easy. You just turned a circular dial and set

the **temperature** for the whole house - give or take a few degrees... and regardless of humidity levels, number of rooms, cooler outside **temperatures** at night and warmer temps during the day, usage, etc.

You get the picture.

Our lifestyle makes it almost impossible to rely solely on one **temperature** setting to provide adequate comfort throughout the day and night. That's why we depend on manufacturers to continually bring new **thermostat** products to the table which are designed to produce new comfort levels to homeowners and businesses.

At the IAHR Expo, **thermostats** were out in force. For instance, at A-- 1 Components, the catchword was "ease. " This is how the company described its line of "Cam-Stat" **thermostats**. These two **thermostats** feature large, easy-to-read **LCD** panels; slim, low-profile design; soft rubber buttons; and a neutral **color**. (Now doesn't that sound pretty laid back?)

The company touts the **thermostats** as "high-tech electrical operations at electrical/mechanical prices. " They are available in standard and programmable versions plus are easy to install. Additional features include English-metric operation, built-in auxiliary **heat** indicator, compressor protection **timer**, and optional power stealing operation.

HIGH TECH, NAME CHANGE

High-tech has arrived with the introduction of the Personalized Intelligent Control System (PICS) from PSG...
...the building owners, want them to do.

"The module plugs into the back of a PC and can set a number of functions, such as **heating**, cooling, and humidification," said PSG's H. Nelson Bender.

The **thermostat** can be programmed to tell a customer when it is **time** to schedule a service call. It also lists the name and phone number of the installing contractor. PSG Controls believes PICS gives building owners "un...

...of their hvac system without "hassling" with complex programmable buttons or with complex energy management systems.

Meanwhile, Research Products Corp. spent a great deal of **time** getting people used to their name change, Aprilaire(R) products.

"For more than 40 years, the name Aprilaire has been synonymous with the best in whole-house humidification;" said company spokesperson Larry Olsen. "Now it's also synonymous with a whole indoor comfort system."

In regard to **thermostats**, the company said its new line of electronic **thermostats** are designed to be energy saving,

easy-to-use, complimentary to a home's d6cor, and have an important safety function.

"These **thermostats** communicate with one another through a link to a PC," said Joe Hlavacek. "Unlike other communication **thermostats**, if the system crashes, the standalone **thermostats** will continue to work and no hvac: functions will be jeopardized."

AND THERE'S MORE

An adjustable knob and a circular wall **thermostat** ... sound familiar? Well, Systems, Controls & Instruments, L.L.C. has added a slight variation to that structure: a round dial on a rectangular box.

The company's "ComforTrol" series of digital **thermostats** are lowvoltage and designed to compete with conventional bimetal **thermostats**. Slide switches are used along with an LED, always glowing. Indicator lights turn on when the hvac system is energized.

A Whoopi Goldberg look-alike hawks the new Aprilaire line of products from Research Products.

SO also offers a logarithmic program called "Smart Sensing," which the company said adjusts the **temperature** differential in order to maintain close room **temperature**, without rapid cycling the equipment.

White-Rodgers/Division of Emerson Electric Co. believes it has a "smart idea." That idea is a smart **thermostat** called the Comfort-Set(R) Digital **Thermostat**. Homeowners can program the **thermostat** and see the results, 24-hours a day. That's because the display is soft backlit, designed to end a lot of groping in the dark to make sure the **thermostat** is set and running correctly.

"This solves the problem of setting the **thermostat** in the dark after coming home," said George Muehlemann.

Although not part of the **thermostat** line (but with direct connections), White-Rodgers touted its Intell-Ignition(TM) Silicon Nitride System as one of the newest and best technologies to hit...

19/5,K/7 (Item 4 from file: 15) Links

Fulltext available through: USPTO Full Text Retrieval Options STIC Full Text Retrieval Options

01796375 04-47366

****USE FORMAT 7 OR 9 FOR FULL TEXT****

Johnson Controls expands Metasys line

Johnson, Wayne; Mazurkiewicz, Greg; et al

Air Conditioning, Heating & Refrigeration News v206n7 pp: 28-29
Feb 15, 1999
ISSN: 0002-2276 **Journal Code:** ACHR
Document Type: Journal article **Language:** English **Length:** 2 Pages
Word Count: 764

Abstract:

At Johnson Controls Inc.'s exhibit at the 1999 International Air-Conditioning, **Heating**, Refrigerating Exposition, the company introduced 16 products. The following products are briefly profiled: 1. the Metasys M5 workstation, 2. Metasys Data Visualization, 3. the Metasys M-Web browser, 4. the Metasys zoning package, 5. the N30 supervisory controller, 6. the TEC1100 Series **thermostat**, 7. the TMx1600 digital room sensor, 8. variable air volume boxes, 9. the Johnson Controls/PENN A419 electronic **temperature** control, 10. VFD66 condenser fan speed controls, 11. RLM Series single-point, refrigerant-specific, leak monitors, 12. the R310A Series ac flow detector, 13. System 350 electronic controls, 14. the FS-1300 combination fire/smoke damper, and 15. the CK720 intelligent network controller.

Company Names:
Johnson Controls Inc (Duns: 00-609-2860 Ticker: JCI)
Geographic Names: US

Descriptors: HVAC; Control systems; Product lines; Electronics; Software; Manyproducts; Trade shows
Classification Codes: 5150 (CN=Energy management); 5240 (CN=Software & systems); 9190 (CN=United States); 8650 (CN=Electrical & electronics industries); 5310 (CN=Production planning & control); 7500 (CN=Product planning & development); 7300 (CN=Sales & selling)

Abstract:

At Johnson Controls Inc.'s exhibit at the 1999 International Air-Conditioning, **Heating**, Refrigerating Exposition, the company introduced 16 products. The following products are briefly profiled: 1. the Metasys M5 workstation, 2. Metasys Data Visualization, 3. the Metasys

M-Web browser, 4. the Metasys zoning package, 5. the N30 supervisory controller, 6. the TEC1100 Series **thermostat**, 7. the TMx1600 digital room sensor, 8. variable air volume boxes, 9. the Johnson Controls/PENN A419 electronic **temperature** control, 10. VFD66 condenser fan speed controls, 11. RLM Series single-point, refrigerant-specific, leak monitors, 12. the R310A Series ac flow detector, 13. System...

Text:

...Metasys Data Visualization tells a user the status of various building automation systems, from hvac equipment to life safety functions in a multiple-building campus. **Colorful**, animated displays help operators visualize and manipulate systems with on-screen tools.

Current data visualization offerings include metaphor displays (such as "Starfield" and "River of **Time**" charts), and abstract displays (such as a "Comfort Chart" and the "Analog Profile" displays).

The Metasys M-Web browser allows the monitoring and control of...

...monitor and control hvac equipment in small buildings. BACnet-compliant, the N30 supervises the networking of application-specific controllers and provides energy management features, including **time** scheduling, alarm management, and controller data exchange.

The TEC1100 Series **thermostat** communicates over the Metasys N2 bus. Based on the T500 **thermostat**, it will be offered in three models.

The TMx1600 digital room sensor with **LCD** and keypad device allows users control of a specified **zone**. Users can change the **temperature** or fan setting, select **heating** or cooling setpoints, and view room or outside air conditions in degrees **Fahrenheit** or **Celsius**.

Variable air volume boxes controlled by vav modular assembly controllers can now be balanced with new software, the VMA Balancing Tool. Software is installed in...

...as well as other thirdparty business software.

(Photograph Omitted)

Captioned as: Johnson Controls said its Metasys zoning package features "innovative control algorithms [that] allow superior **temperature** control to commercial zoning algorithms."

The Johnson Controls/ PENN A419 electronic **temperature** control combines keypad programming with an LCD. A large display screen lets users check between setpoint and **temperature**, and makes it easy to see relay status, the company says.

VFD66 condenser fan speed controls are designed to control three-phase condenser fan motors...

...circuit.
System 350TM electronic controls can handle even more applications with two new additions to the line. A modular control series for medium- to largescale **temperature**, humidity, and pressure applications, the company says.

This stand-alone system consists of a control module linked with various stage, display, and transformer modules. New to the line: the S350P proportional plus integral **temperature** stage control and the A350S electronic **temperature** reset module without a relay.

The FS-1300 combination fire/smoke damper has been dynamically tested, and its 11/2hr Fire/Class II leakage rating...

19/5,K/34 (Item 1 from file: 781) Links
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03823546 ASNS249225 **(USE FORMAT 7 OR 9 FOR FULLTEXT)**

Get ready for a kitchen-think drama Kitchens that think for themselves are just around the corner, and sexy new appliances that rewrite the style rulebook are already here. NICOLE SWENGLEY reports

Nicole Swengley
Evening Standard - London
Friday , August 7, 1998
Document Type: Newspaper, Large **Journal Code:** TEVS **Language:** ENGLISH
Record Type: FULLTEXT
Word Count: 1,307

Lead Paragraph:

FUTURISTIC kitchens which run themselves, suggest evening meals, order food and contact repairers when appliances need new parts are some of the predictions in a new report from the electrical manufacturer Zanussi.

The problem with new-tech forecasts is that they generally remain as elusive as Mystic Meg's prophecies when you try to buy them. But this month Zanussi lives up to its cute slogan ("the appliance of science") by launching a series of sexy New Age machines which should make life easier for homeowners.

Country Of Publication: Europe; United Kingdom
Descriptors: GBP; cooker; fridge; chill; freezer; oven; Zanussi; Wysius
(USE FORMAT 7 OR 9 FOR FULLTEXT)

1998

...on all its
shelves and a cooker that automatically selects the best temperature for your meal.

Since manufacturing technologies are making it easier to introduce colour, Zanussi's new range includes yellow cookers and bright blue fridges. A move away from sharp edges and hard lines towards more organic forms means...

...mounted storage unit which you

pull out and pour away. The machine automatically senses the time needed to dry the contents.

The dishwasher

A silver-**coloured** space-age machine (model DWS939S) governs the amount of water used, softens it, and prevents the machine from flooding. This design costs around GBP 400...

...electronically-controlled oven (model ZBS772X) automatically selects the best temperature for the type of cooking required (you can also operate it manually).

Instead of a **thermostat** light turning on and off it shows the oven's exact temperature all the time on an **LCD** display. Knobs are replaced by easy-to-use touch controls. It has a fast heat-up feature and turns itself off when ready.

It costs...

...offers fantastic picture quality. As the picture is stable, continuous and distortion-free, there are no visible lines or flickers on the screen. A special **colour** filtration process provides lifelike **colours** and good **contrast**.

When I watched a snatch of the film GoldenEye on this new TV I was amazed at how much detail I had

Google™

Search within results

There were about **25,500** Google results for **thermostat OR thermostats SHADED OR SHADING OR "DIFFERENT COLOR" OR "DIFFERENT COLORED" LCD OR GUI OR "LIQUID DISPLAY" OR "LIQUID CRYSTAL DISPLAY" OR "GRAPHICAL USER INTERFACE".**
Use the search box below to search within these results.

Search within results

EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	62386	(shaded shading darker lighter) near3 (zone portion area section sector band)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2008/01/18 15:40
L2	499	1 with (lcd gui liquid adj crystal adj display graphic adj user adj interface)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2008/01/18 15:40
L3	0	2 same (time and temperature)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2008/01/18 15:41
L4	1	2 same (thermostat$)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2008/01/18 15:41